1991 *AIAA Journal* Index

How to Use the Index

In the Subject Index, pages 2285–2295, each technical paper is listed under a maximum of three appropriate headings. Note the number in boldface type following each paper title, and use that number to locate the paper in the Chronological Index. The Author Index, pages 2296–2298, lists all authors associated with a given technical paper. The locating numbers are identical to those in the Subject Index. The Chronological Index, pages 2299–2310, lists all papers by their unique code numbers. This listing contains titles, authors and their affiliations, and volume, issue number, and page where the paper appeared. It also gives the AIAA paper number, if any, on which the article was based, as well as the "CP" or conference volume number if the paper was published in a bound collection of meetings papers. Comments, Replies, and Errata are listed directly beneath the paper to which they refer. If the paper to which they refer was published prior to 1991, that paper also will appear in both the Subject and Chronological Indexes. Authors of Comments also are listed in the Author Index. The Book Review Index, page 2311, lists the books reviewed during 1991, the author, publisher, reviewer, and the issue, number, and page on which the review appeared.

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J91-326 Confined Normal-Shock/Turbulent-Boundary-Layer Interaction Followed by an Adverse Pressure Gradient. M. Sajben, M. J. Morris, T. J. Bogar and J. C. Kroutil, *McDonnell Douglas Research Laboratories* (**29**, 12, p. 2115) Article

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J91-328 Experimental Investigation of Coannular Jet Flow with Swirl Along a Centerbody. M. O. Frey and F. B. Gessner, *University of Washington* (**29**, 12, p. 2132) Article based on AIAA Paper 90-1622

J91-329 Effect of Gravity on Flame Instabilities in Premixed Gases. G. Patnaik, *Berkeley Research Associates*; K. Kailasanath and E. S. Oran, *Naval Research Laboratory* (**29**, 12, p. 2141) Article based on AIAA Paper 89-0502

J91-330 Compressibility Effects in Thin Channels with Injection. G. Balakrishnan, A. Liñán and F. A. Williams, *University of California, San Diego* (**29**, 12, p. 2149) Article

J91-331 Closed-Loop Amplitude Modulation Control of Reacting Premixed Turbulent Jet. E. Gutmark, T. P. Parr, D. M. Hanson-Parr and K. C. Schadow, *Naval Weapons Center* (**29**, 12, p. 2155) Article

J91-332 Frequency Measurements in a Finite Cylinder Wake at a Subcritical Reynolds Number. M. Budair, *King Fahd University of Petroleum and Minerals, Saudi Arabia*; A. Ayoub and K. Karamcheti, *Florida State University* (**29**, 12, p. 2163) Article

J91-333 Prediction of Steady and Unsteady Asymmetric Vortical Flows Around Circular Cones, Osama A. Kandil, Tin-Chee Wong, *Old Dominion University;* and C. H. Liu, *NASA Langley Research Center* (**29**, 12, p. 2169) Article based on AIAA Paper 90-0598

J91-334 Numerical Study on Using Sulfur Hexafluoride as a Wind Tunnel Test Gas. W. Kyle Anderson, *NASA Langley Research Center* (**29**, 12, p. 2179) Synoptic based on AIAA Paper 90-1421 CP905

J91-335 Hydrogen Fluoride Overtone Chemical Laser Technology. William A. Duncan, Barbara J. Rogers, Miles E. Holloman and Stanley P. Patterson, *U.S. Army Missile Command, Redstone Arsenal* (**29**, 12, p. 2181) Article based on AIAA Paper 89-1903

J91-336 Drag Balance for Hypervelocity Impulse Facilities. S. R. Sanderson and J. M. Simmons, *University of Queensland, Australia* (**29**, 12, p. 2185) Article

J91-337 Stress Analyses of Laminated Thick-Walled Cylindrical Anisotropic Shells. O-Il Byon, *College of Industrial Technology, Japan*; and Jack R. Vinson, *University of Delaware* (**29**, 12, p. 2192) Article based on AIAA Paper 90-0921 CP902

J91-338 Experimental and Theoretical Analysis of Composite I-Beams with Elastic Couplings. Ramesh Chandra and Inderjit Chopra, *University of Maryland* (**29**, 12, p. 2197) Article based on AIAA Paper 91-1024

J91-339 Spacecraft Wall Design for Increased Protection Against Penetration by Orbital Debris Impacts. William P. Schonberg, *University of Alabama in Huntsville*; and Randy J. Tullos, *Southwest Research Institute* (**29**, 12, p. 2207) Article

J91-340 Diagnostic Monitoring and Sensitivity Analysis of Contact Dynamics in Jointed Structures. Yiming Rong, *Southern Illinois University*; and Horn-Sen Tzou, *University of Kentucky* (**29**, 12, p. 2215) Article

J91-341 Structural Model Correlation Using Large Admissible Perturbations in Cognate Space. Michael M. Bernitsas and Ricky L. Tawekal, *University of Michigan* (**29**, 12, p. 2222) Article

J91-342 Elimination of Gibbs' Phenomena from Error Analysis of Finite Element Results. Gaylen A. Thurston, *NASA Langley Research Center*; and Rajaram Sistla, *Analytical Services & Materials, Inc.* (**29**, 12, p. 2233) Article based on AIAA Paper 90-0932 CP902

J91-343 Differential Equation Based Method for Accurate Approximations in Optimization. Jocelyn I. Pritchard and Howard M. Adelman, *NASA Langley Research Center* (**29**, 12, p. 2240) Article based on AIAA Paper 90-1176 CP902

J91-344 Collapse of Axially Compressed Cylindrical Shells with Random Imperfections. J. Arbocz and J. M. A. M. Hol, *Delft University of Technology, The Netherlands* (**29**, 12, p. 2247) Article

J91-345 Bordering Algorithm for Solution of Boundary-Layer Equations in Inverse Mode. Hsun H. Chen and Tuncer Cebeci, *California State University* (**29**, 12, p. 2257) Technical Note

J91-346 Stratified Flow Around an Axisymmetric Body at Small Angle of Attack. H. E. Gilreath, *Johns Hopkins University* (**29**, 12, p. 2259) Technical Note

J91-347 Surface Grid Generation Based on Unstructured Grids. Masahiro Suzuki, *Institute of Comutational Fluid Dynamics, Japan* (**29**, 12, p. 2262) Technical Note

J91-348 Similarity Solutions for Supersonic Axisymmetric Flows. Hamdi T. Hemdan, *King Saud University, Saudi Arabia* (**29**, 12, p. 2264) Technical Note

J91-349 Resonance Prediction for Slotted Circular Wind Tunnel Using Finite Element. In Lee and Ki-Young Baik, *Korea Advanced Institute of Science and Technology* (**29**, 12, p. 2266) Technical Note

J91-350 Enhancement of Frequency and Damping in Large Space Structures with Extendible Members. C. T. Sun and R. T. Wang, *Purdue University* (**29**, 12, p. 2269) Technical Note based on AIAA Paper 88-2482 CP883

J91-351 Structural Damage Detection Using Modal Test Data. Tae W. Lim, *Lockheed Engineering and Sciences Company* (**29**, 12, p. 2271) Technical Note

J91-352 Improved Solution for Ill-Conditioned Algebraic Equations by Epsilon Decomposition. Irving U. Ojalvo, *University of Bridgeport* (**29**, 12, p. 2274) Technical Note

Books Reviewed During 1991

Advances in Fluid Mechanics Measurements, edited by M. Gad-El-Hak, *Springer-Verlag,* (**29**, 3, p. 489); reviewed by R. J. Adrian.

Heat Transfer Reviews, edited by E. R. G. Eckert, R. J. Goldstein, T. F. Irvine Jr., and J. P. Hartnett, *Wiley,* (**29**, 3, p. 489); reviewed by L. S. Fletcher.

Nonequilibrium Hypersonic Aerothermodynamics, by C. Park, *Wiley,* (**29**, 5, p. 857); reviewed by C. E. Treanor.

Methods for the Localization of Singularities in Numerical Solutions of Gas Dynamics Problems, by E. V. Vorozhtsov and N. N. Yanenko, *Springer-Verlag,* (**29**, 6, p. 1026); reviewed by G. Moretti.

Wing Theory, by R. T. Jones, *Princeton University Press,* (**29**, 7, p. 1185); reviewed by P. B. S. Lissaman.

Virtual Principles in Aircraft Structures, by B. E. Gatewood, *Kluwer,* (**29**, 9, p. 1537); reviewed by C. W. Bert.

A Modern Course in Aeroelasticity—Second Revised Edition, by E. H. Dowell (ed.), H. Curtiss Jr., R. H. Scanlan, and F. Sisto, *Kluwer,* (**29**, 11, p. 2017); reviewed by P. Hajela.